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UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

242526 ULTRASONIC RECEIVER to measure the time intervals of the reception of ultrasonic pulses uses as shaping units following the detectors flip-flop circuits with a time constant of the base-emitter circuit which is smaller than the minimum time of propagation of the ultra-sound in the test medium. Their inputs are connected to the detectors and their outputs to a trigger. The latter passes pulses to an output stage where they are converted to a dc voltage proportional to the time interval between pulses.

11.8.67 as 1178498/18-10.G.I. BIRGER, et alia. RARE METAL INDUSTRY RES. INST. (11.9.69) Bul 15/25.4.69. Class 42s. Int. Cl. B 06b.

7/17

19781703

AA0046456

AUTHORS: Birger, G. I.; Brazhnikov, N. I.; Kanevskiy, I. N. Sivakov, M. A.

Gosudarstvennyy Nauchno - Issledovatel'skiy i Proyektnyy Institut Redkometall-
icheskoy Promyshlennosti

7/2
19781704

1/2 013 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--DETERMINATION OF THE RESIDUAL STRESSES IN SAMPLES OF COMPLEX FORM
-U-
AUTHOR--BIRGER, I.A. **B**
COUNTRY OF INFO--USSR
SOURCE--ZAVOD. LAB., 1970, 36, (1), 76-80
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, METHODS AND EQUIPMENT
TOPIC TAGS--MEASUREMENT, METAL STRESS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/0243 STEP NO--UR/0032/70/036/001/0076/0080
CIRC ACCESSION NO--AP0124005
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--13NOV79

CIRC ACCESSION NO--AP0124005

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD OF DETERMINING RESIDUAL SURFACE STRESSES IN METAL AND OTHER SAMPLES OF COMPLEX SHAPE IS PROPOSED. THE METHOD IS BASED ON CUTTING OUT ROD SHAPED SPECIMENS AT THE POINTS OF GREATEST LOCAL STRESS CONCENTRATION. FORMULAE ARE PRESENTED FOR DETERMINING THE RESIDUAL STRESSES IN SAMPLES OF ARBITRARY CROSS SECTION BY ANALYSING A SERIES OF DEFLECTIONS AND LINEAR STRAINS IN THE TEST PIECES.

UNCLASSIFIED

USSR

(2)
BIRGER, YE. S., KERBIKOV, B. O., KONYUKHOVA, N. B., and SHAPIRO, I. S., Institute of Theoretical and Experimental Physics of the State Committee on the Use of Atomic Energy (BIRGER, YE. S., now at Institute of Control Problems, and KONYUKHOVA, N. B., at Computer Center of the Academy of Sciences USSR)

"Bound Quasinuclear States of $2N2\bar{N}$ System"

Moscow, Yadernaya Fizika, Vol 17, No 1, 1973, pp 178-185

Abstract: The article shows that in the X-region there can be quasinuclear mesons which represent bound states of two nucleons and two antinucleons ($2N2\bar{N}$). The characteristic qualitative peculiarities of the bound states in the $2N2\bar{N}$ system are as follows:

1) The isospins of the four-particle mesons may reach values of $I=2$. Experimental data fail to contradict the presence of doubly charged mesons in the X-region;

2) The partial widths $\Gamma_{N\bar{N}}$ for four-particle meson decay over the $N\bar{N}$ channel should be much less than the corresponding widths of the

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USSR

BIRGER, YE. S., et al., Yadernaya Fizika, Vol 17, No 1, 1973, pp 178-185
 quasinuclear two-particle resonances $\bar{N}N$. Therefore, the $2N2\bar{N}$ mesons can hardly appear as resonances in the antinucleon-nucleon scattering cross-section;

3) The cross-section for the generation of $2N2\bar{N}$ mesons in processes of the type $\pi + N \rightarrow X + \bar{N}$ should, beginning with certain values, undergo a sharp exponential drop due to the reduced probability of the production of a correlated group from four particles with nonrelativistic relative velocities.

The mass and annihilation width spectrum is obtained for states with the quantum numbers $I^G(J^P)=2^+(4^+)$. One of the levels found has a width of 34 Mev and hence should be observed experimentally as a doubly charged meson in the X-region.

The authors thank O. D. DAL'KAROV and V. D. EFROS for useful comments.

USSR

BIRGER, YE. S., KERBIKOV, B. O., KONYUKHOVA, N. B., and SHAPIRO, I. S., Institute of Theoretical and Experimental Physics of the State Committee on the Use of Atomic Energy (BIRGER, YE. S., now at Institute of Control Problems, and KONYUKHOVA, N. B., at Computer Center of the Academy of Sciences USSR)

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- 84 -

USSR

BIRGER, YE. S., et al., Yadernaya Fizika, Vol 17, No 1, 1973, pp 178-185

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3) The cross-section for the generation of $2N2\bar{N}$ mesons in processes of the type $\bar{N}+N \rightarrow X+N$ should, beginning with certain values, undergo a sharp exponential drop due to the reduced probability of the production of a correlated group from four particles with nonrelativistic relative velocities.

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The authors thank O. D. DAL'KAROV and V. D. EFROS for useful comments.

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Therapy

USSR

UDC 617.7-085.841

BIRICH, T. V., Professor, Head of the Chair of Ophthalmology, Minsk Medical Institute

"The Use of Ultrasound in Certain Eye Diseases"

Minsk, Zdravookhraneniye Belorussii, Vol 16, No 7, Jul 70, pp 23-26

Abstract: A review is presented of the therapeutic use of ultrasound in ophtalmology. At a meeting of Belorussian ophthalmologists in 1967, it was decided to introduce the use of ultrasound treatment at the Minsk Medical Institute. In 1968 ultrasound was used on 64 patients (81 eyes) in the treatment of degenerations of the retina, optic atrophies, various traumatic involvements, myopias, tuberculosis and other infections, cataracts, opacities in the vitreous humor, and other ophthalmologic diseases. With only a few exceptions, the patients either benefited or were cured without experiencing any discomfort during therapy. Treatment was discontinued for one patient treated for dense opacity of the vitreous humor who complained of flickering during six successive ultrasound applications. In two patients, one with ophthalmotonus and the other with a change in elasticity, the condition seemed to be aggravated, owing to the partial blocking of the anterior chamber by an exudate. In all other cases, ophthalmotonus and elasticity remained normal during and after treatment. The use of ultrasound in ophthalmology is strongly recommended, especially in conjunction with other methods of treatment.

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1/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--WAYS AND METHODS OF REHABILITATION OF INVALIDS WITH A PATHOLOGY OF
THE ORGAN OF VISION IN BYELORUSSIA -U-

AUTHOR-(03)-BIRICH, T.V., BIRAN, V.P., PISARENKO, D.K.

COUNTRY OF INFO--USSR

B

SOURCE--ZDRAVGOOKHRANENIYE BELORUSSI, 1970, NR 4, PP 86-89

DATE PUBLISHED--70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--EYE DISEASE, BLINDNESS, REHABILITATION, GEOGRAPHIC LOCATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1851

STEP NO--UR/0477770/000/004/0086/0089

CIRC ACCESSION NO--AP0129211

UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129211

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. A SUCCESSFUL RESOLUTION OF THE PROBLEM OF REHABILITATION OF INVALIDS WITH AN EYE PATHOLOGY TO A CERTAIN DEGREE DEPENDS UPON AN INSUFFICIENT REGISTRATION OF THE BLIND AND THE CAUSE OF BLINDNESS AND EYE WEAKNESS, AND ALSO PERFECTION OF THE METHODS OF MEDICAL PROFESSIONAL REHABILITATION OF INVALIDS DUE TO THE VISUAL ORGAN PATHOLOGY. SPECIAL ATTENTION HAS BEEN DRAWN TO A THOROUGH STUDY OF BLINDNESS AND EYE WEAKNESS IN CHILDREN AND ALSO TO THE PROBLEM OF RATIONAL WORK SUPPLY OF THE THIRD GROUP INVALIDS. FACILITY: KAFEDRA GLAZNYKH BOLEZNEY MINSK. MED. INST. AND N-I LABORATORIYA EKSPERTIZY TRUDOSPOSOBNOSTI INVALIDOV TRUDA MINISTERSTVA SOTSIAL. OBESPECHENIYA BSSR.

UNCLASSIFIED

BIRIKH, R. V.

NUMERICAL STUDY OF THE FLOW OF A LIQUID-METAL IN MAGNETOHYDRODYNAMIC PUMPS

(Abstract of a Paper by R. V. BIRIKH, V. A. BISHKIN, G. I. BURDE, R. K. GORN, V. P. POLISHCHUK, V. I. TILUSHEV given at a Magnetohydrodynamic Conference, pp 121-122)

In order to determine the optimal parameters of the structural design of a magnetohydrodynamic pump, it is necessary to have a concept of the nature of movement of the liquid-metal in the zone of effect of the electromagnetic forces. The solution of this system for regions of complex configuration even by numerical methods presents significant difficulties. However, in a number of cases of interest for practical applications, it is possible to introduce some simplifying assumptions.

If the distributions of the magnetic and electric fields are caused only by external sources and do not depend on the movement of the liquid (the inductionless approximation), then the problem can be reduced to the solution of the equations of ordinary hydrodynamics in the given nonuniform force field.

In this approximation a study has been made of the two-dimensional movement of a viscous incompressible liquid in a cross core with a linear decrease in magnitude of the force with respect to both coordinates. The finite-difference equations written for the current and vorticity functions were solved by the iteration method with a successive linear relaxation on a computer.

The nonuniform force distribution in the lateral channel (pocket) leads to the occurrence of turbulence in it. Depending on the force distribution in the core and also the parameters characterizing its configuration, the turbulence in the pocket will to a greater or lesser degree affect the movement of the liquid in the central channel, that is, the pump parameters.

A study was made of the dependence of these parameters (the magnitude of the head H and the drag C) on the flow rate of the liquid through the transverse cross section of the central channel (the Reynolds number Re) and the force distribution in the core.

- 35 -

JPES 60634
27 November 1973

USSR

UDC: 621.317.8

BIRINA, G. A., LIVCHAK, P. S.

"Determination of Optimum Conditions of Ion-Plasma Vaporization of Resistive Molybdenum Films With the Aid of Mathematical Methods of Experiment Planning"

Elektron. tekhnika. Nauch.-tekhn. sb. Radiodetali (Electronic Technology. Scientific and Technical Collection. Radio Components), 1970, vyp. 4(21), pp 79-86 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V298)

Translation: The paper describes an attempt to use mathematical methods of experiment planning for studying the process of synthesis of metal-oxide resistive films by thermoreactive vaporization of molybdenum. It is shown that the principal factors in this process are the pressure of the reactive gas and the potential of the target. A computer is used to determine the optimum region of vaporization of resistive films in the plane of the principal factors. Resumé.

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Acc. Nr: AP0037239

B Ref. Code: UR 0301

PRIMARY SOURCE: Voprosy Meditsinskoy Khimii, 1970, Vol 16,
Nr 1, pp 51-58

ACTIVITIES OF HEXOKINASES AND DEHYDROGENASES OF PENTOSE-
PHOSPHATE CYCLE IN TRANSPLANTED HEPATOMAS OF MICE

Il'in, V. S.; Teras, L. E.; Kil'dema, L. A.; Birk, R. V.;
Pyldvere, E. I.

The Department of Biochemistry, Institute of Experimental Medicine USSR Academy
of Medical Sciences, Leningrad. The Department of Biochemistry, Institute of Experimental
and Clinical Medicine Estonian SSR Ministry of Health, Tallinn

Activities of hexokinase, glucokinase and fructokinase, and dehydrogenases of glucose-6-phosphate and 6-phosphogluconate in cytostructures of slowly-growing (hepatoma 48 and 46) and rapidly-growing (hepatoma 22) transplanted hepatomas of C₃H mice were studied. Specific activity of hexokinase is significantly elevated in soluble as well as in mitochondrial fractions of all hepatomas studied. The specific activity of glucokinase in soluble fraction of slowly-growing hepatomas was more than in the

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control. This may be connected with substantial decrease in protein content in this fraction of hepatomas. The specific activity of hepatomas glucokinase in mitochondria from hepatomas 48 and 46 was significantly lower than in the control, and does not developed in the tissue of rapidly-growing hepatomas. The specific activity of fructokinase in soluble fraction and mitochondria from slowly-growing hepatomas was slightly less than in the control. The activity of fructokinase in mitochondria of rapidly-growing hepatomas has not been noted. The specific activity of glucose-6-phosphate and 6-phosphogluconate dehydrogenases is sharply increased in soluble fraction of both slowly-growing and rapidly-growing hepatomas.

D.H.

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19730165

Veterinary Medicine

USSR

UDC 619.614.9.47:636.4

BIRKAN, N. N. and PETROV, V. F., Vitebsk Institute of Veterinary Medicine

"Simultaneous Vaccination of Swine Against Cholera, Erysipelas, and
Aujeszky's Disease"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Sel'skokhozyaystvennykh Nauk,
No 4, 1972, pp 102-106

Abstract: Twenty-two piglets in the laboratory and 350 weanling piglets on a farm were simultaneously vaccinated against cholera, erysipelas, and Aujeszky's disease. The farm animals were vaccinated twice, the first time against cholera and erysipelas, the second time, 12 to 14 days later, against cholera, erysipelas, and Aujeszky's disease. The associated method of vaccination was used. Blood studies revealed the presence of immunity in the inoculated animals. The side effects produced by the mixtures of 2 and 3 vaccines were not cumulative or more intense than those produced by the monovaccine. Inoculation of some of the experimental animals with the agents of cholera, erysipelas, and Aujeszky's disease resulted in stable immunity to these infections 4 months afterward (observation period).

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USSR

UDC: 911.3.616.927(477)

BIRKOVSKIY, Yu. Ye., ZARITSKIY, A. M.

"Epidemiological Characteristics of Typhoid in Ukrainian SSR for 1964-1969"

V sb. Materialy XV Vses. s'ezda epidemiologov, mikrobiologov i infektzionistov. Tezisy dokl. Ch. 1 (Proceedings of the 15th All Union Conference of Epidemiologists, Microbiologists and Specialists in Infectious Diseases, Reports of Theses, Part I--collection of works) Moscow, 1970, pp 278-279 (from RZh-36. Meditsinskaya geografiya No 1, Jan 71, Abstract No 1.36.249 by V. Maslovskaya)

Translation: The incidence of typhoid in the Ukrainian SSR has decreased by 41% since 1964-1969. As a result of social re-organization (communal organization of public services and amenities in cities and settlements), there are changes in the territorial morbidity distribution for typhoid -- the incidence among city dwellers constantly decreases, but remains at the same levels in agricultural localities. The decrease occurs equally through all population age groups. There has been an improvement in isolating sources of infection, chiefly bacterial agents. Infection from carrier has been established in 6.6% of typhoid cases in 1959-1963; and for 1964-1968 -- in 15.8% of cases.

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USSR

UDC 616.931-02:616.9-036.2

BIRKOVSKIY, Yu. Ye., MILOVANOV, L. P., SHIMANSKIY, O. V., KVIRKO, Ye. G.,
VOITER, A. S., BAZILEVA, A. M., and MODOVSKAYA, F. Ya., Kiev

"Epidemiological Significance of Mild Atypical Forms of Diphtheria Under Present Conditions"

Kiev, Vrachebnoye Delo, No 8, Aug 70, pp 145-149

Abstract: The incidence of diphtheria in the USSR has declined sharply since the end of World War II, from 150 per 100,000 population in 1944 to only sporadic cases in 1966. However, this decrease in the diphtheria rate has not been matched by a corresponding decline in the number of carriers of diphtheria bacilli. Studies conducted in 1964 and 1965 in Kiev revealed that 2.5% of all healthy children examined, and about 15% of children in boarding schools and similar groups, were carriers. The disparity between the incidence of diphtheria and the number of carriers is thought to be due largely to a failure to diagnose mild, atypical forms of the disease. These forms are common in immunized children, in whom the characteristic symptoms include subfebrile temperature, mildly hyperemic throat, and slight enlargement of the lymph nodes. The number of cases of children with sore throat who also carry diphtheria bacilli is increasing from year to year. The carrier state and sore throat may be regarded as interrelated.

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1/2 021 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--NORMS OF ANTIEPIDEMIC SERVICES OF A RURAL POPULATION -U-

AUTHOR-(05)-~~DIRKOVSKIY~~, YU.YE., PONOMAREVA, G.YE., PAVLOV, A.V., GOROBETS,
F.M., DLBRUSHTAN, YE.V.
COUNTRY OF INFO--USSR

SCURCE--VRACHEBNOYE DELO, 1970, NR 5, PP 150-152

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--EPIDEMIOLOGY, PUBLIC HEALTH, MEDICAL PERSONNEL, GEOGRAPHIC
LOCATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0425

STEP NO--UR/0475/70/000/005/0150/0152

CIRC ACCESSION NO--AP0126178

UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126178

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ANALYSIS OF EPIDEMIOLOGICAL SERVICES IN RURAL DISTRICTS MADE IT POSSIBLE TO SUGGEST THE FOLLOWING NORMS FOR ADEQUATE SERVICE OF THE RURAL POPULATION: ONE EPIDEMIOLOGIST PER 24.2 THOUSAND INHABITANTS AND ONE ACCISTANT EPIDEMIOLOGIST PER 12.6 THOUSAND INHABITANTS. FACILITY: KIYEVSKIY INSTITUT EPIDEMIOLOGII, MIKROBIOLOGII I PARAZITOLOGII.

UNCLASSIFIED

USSR

UDC 621.646.4

BIRMAN, A. I., ZAKATOV, V. P., KOLOYDENKO, A. L., MASHBITS, A. V., and
POTEPALOV, Yu. N., Central Scientific Research Institute of Large-Scale
Automation and Special Design Office for Automation in Petroleum Refining
and the Petrochemical Industry

"Pneumatic Long-Term Memory Device"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 28, 1971, p 199

Abstract: USSR Authors' Certificate No 315183 (Cl. G 06g 5/00), filed
4 January 1970, issued 21 September 1971, covers a pneumatic long-term
memory device containing an oscillator and a cathode follower and two
pulsating capacitances with a control and a working cavity in each, con-
nected to the oscillator through contacts. In order to reduce temperature
error, the control cavities of the capacitances, filled with a liquid with
a low coefficient of temperature expansion, are interconnected through a
contact; the working cavity of one capacitance is connected with the
cathode follower input and with input and reference pressure sources through
contacts; and the working cavity of the second capacitance is connected via
contacts to the reference pressure source and the atmosphere.

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VIII-2. MECHANISM OF THE OCCURRENCE OF PORES IN CRYSTALS GROWN FROM A GAS-SATURATED MELT

Article by Il'ia I. Almazan, Ye. R. Dolgovskaya, V. V. Pishchik, L. A. Syrovatka and L. V. Arsenchenko, All-Union Scientific Research Institute of Single Crystals, Naryn-Kovt'kovskiy, III Symposium on Problems of Single Crystals, Sverdlovskiy Khimicheskii Plant, Moscow, 12-17 June 1976, p. 103.

A study was made of the physical processes defining the pore formation in simple crystals for their growth from a gas-saturated melt. The dissolution and saturation of the melt with the gas solution components, their separation on the phase interface and the processes of removal of these components deep in the melt as a result of diffusion and convection were investigated. A study was made of the problem of the occurrence of nucleation centers of the gas phase at the crystallization front and their effect on the pore formation in the liquid phase.

The morphology of pores in single crystals of cadmium sulfide, zinc sulfide and leucosapphire was investigated. In the crystals pores of spherical, columnar and drop shape were observed. Studies were made of the problems of faceting of the pores during the process of high-temperature annealing. Certain problems of the growth kinetics of bubbles in the melt and the columnar pores in the crystal are discussed.

The general laws of the occurrence of pores in single crystals of semiconductor compounds grown from a dissolving melt were found.

BIRMAN, B. I.

BIRMAN, B.I.

SPKS 59208
6-73

VI-6. THEORETICAL STUDY OF THE EFFECT OF DIFFERENT FACTORS ON THE LAMELLAR DISTRIBUTION OF ADMIXTURES IN THE CRYSTALS

Article by B. I. Birman, All-Union Scientific Research Institute of Single Crystals, Khar'kov; Novosibirsk, III Steptsium po Protsessam Kogda I Sintezu Poliproduktov in Kriсталlov I Plamki, Russian, 12-17 June, 1972, p 80

A study was made of the effect of the temperature oscillations in the melt caused by external causes on the relative amplitude of the impurity banding by solution of the equations of thermal conductivity and diffusion. The results of the mathematical solution of the problem are presented. An analysis is made of the effect of the reduced temperature gradient in the melt $X = G_L / \omega T_C$, the dimensionless oscillation frequency $Y = \omega d^2 / D$, the dimensionless thickness of the diffusion boundary layer $n = \sqrt{8} / 2D$ characterizing the intensity of mixing of the melt, the latent heat of crystallization parameter $Q_0 = Q_0 D / (k - \omega C_0)$ and other factors on the relative amplitude of the impurity banding $Y = \omega d^2 / k T$ in the crystals.

It was established that on the curves for Y as a function of X there is a peak located in the region of existence of the concentration supercooling ($X < 1$) for oscillations of comparatively low frequency ($Y < 1$). With an increase in the oscillation frequency, this function becomes smoother. The dependence of the banding amplitude on the frequency for comparatively high frequency ranges, and for low temperature gradients in the melt, the banding amplitude decreases monotonically with the frequency. The release of the latent heat of crystallization and reduction of the initial concentration of the admixture in the melt decreases the banding amplitude especially at high frequencies. The distribution coefficient of the admixture k at high frequencies almost has no effect on the banding characteristics, and at low frequencies, the smaller values of k correspond to the higher values of Y . The applicability of the results obtained to decrease the amplitude of the impurity banding when growing semiconductor single crystals is discussed.

USSR

BIRMAN, I. B.

"Solar Activity and the Numerical Dynamics of Aquatic Organisms in the Example of Fish"

V sb. Solitse, elektrichestvo, zhizn' (Sun, Electricity, Life--collection of works), Moscow, Moscow University, 1972, pp 74-76 (from RZh-Astronomiya, No 3, Mar 73, Abstract No 3.51.536)

Translation: The reserves of aquatic animals, especially fish, play an enormous role in providing mankind with food products. Therefore, the investigation of significant cyclic changes taking place in these reserves has great significance. The proposed similarity of the magnitude of the numerical cycles of various species of commercial fish to the 11 years of the solar activity makes it extremely important to study the possibility of the effect of this external factor.

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Mechanical Properties

USSR

UDC 669.14.018.8:620.186.82

BIRMAN, S. I., and ORZHEKHOVSKIY, YU. F., All Union Scientific Research Institute of Aviation Materials

"Grain Communion in 08Kh15N5D2T Stainless Steel"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 12, 1973, pp 18-21

Abstract: The influence of overheating on the mechanical properties of high-strength and martensitic aging 08Kh15N5D2T stainless steel was experimentally investigated. The results are discussed by reference to diagrams showing the dependence of mechanical properties and grain size on the hardening temperature. The investigated steel was found to be sensitive to overheating in the state of maximum hardening (aging at 450°C); this is expressed in a considerably decreased impact ductility at +20°C and at -70°C with increasing hardening temperature from 950 to 1200°C. A total structural austenitic recrystallization in 08Kh15N5D2T steel takes place with the repeated heating of the overheated steel to 950°C; in this case a reduction of the impact ductility, an elimination of the coarse crystalline structure in the granular fracture, and a disappearance in the microstructure of the boundaries of overheated initial grains occur. High-temperature tempering at 650°C before repeated heating of

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USSR

BIRMAN, S. I., and ORZHEKHOVSKIY, YU. F., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 12, 1973, pp 18-21

the overheated steel causes an increased recrystallization temperature and a growth of the grain. The sources of the retardation effect of high-temperature tempering are explained by the flow of the processes of martensitic relaxation and the formation of carbides before the repeated austenitization. Four figures, five bibliographic references.

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21 =

Heat Treatment

USSR

UDC 669.15'24-194:669.018.58

AL'TGAUZEN, O. N., LYUBETSKAYA, O. V., BIRMAN, S. R., and ZAYTSEVA, G. A., Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin /TsNIICHERMET/

"Magnetic Properties of Iron-Nickel Alloys"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 4, 1972, pp 68-70

Abstract: A study has been made of the effect of final heat treating on both the structure and magnetic properties of 0.02-, 0.1-, and 0.2-mm thick strip of 79NM, 50N, and 50NP magnetically soft alloys operated in constant or variable fields at 50 to 9600 cps. The properties of these alloys in a constant magnetizing field are shown to be very sensitive to annealing temperatures within 900-1100°C and to cooling rates below 600°C from 0.4 to 17 deg/min. As the frequency is increased to 9600 cps, the sensitivity of the alloys to heat treating decreases. A decrease in annealing temperature may reduce the frequency dependence of the maximum permeability of the strip. In a variable magnetizing field, an increase in frequency makes the maximum permeability and specific losses of the strip less sensitive to changes in cooling rates from 2 to 17 deg/min.

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USSR

UDC: 661.145:546.47.021

GURVICH, A. M., TOMBAK, M. I., MIRHALEV, A. A., NIKIFOROVA,
A. P., BIRMAN, T. A.

"Effect of Deposition Conditions on the Dispersity of Sulfides
and Tungstates, and on the Properties of Phosphors Made From
Them"

Sb. nauch. tr. VNIImuniforov i osobo chist. veshchestv (Col-
lected Scientific Works of The All-Union Scientific Research
Institute of Phosphors and Extra Rare Materials), 1971, vyp. 5,
pp 133-143 (Chem. Abstr., No 7, Apr 72, Abstract No 71177)

Translation: This paper deals with an important part in the process
of deposition of phosphors on cathode supports. The main line of the
research is the study of the effect of the deposition conditions on the
dispersity of the phosphors, and on the properties of the phosphors.
The authors have found that the dispersity of the phosphors is
determined by the conditions of deposition. On the basis of these
conclusions, the authors have developed a method for the deposition
of phosphors on cathode supports. The method is based on the use
of a special deposition medium, which contains a small amount of
phosphor. The authors have found that the dispersity of the
phosphors is determined by the conditions of deposition. The
method is based on the use of a special deposition medium, which
contains a small amount of phosphor. The authors have found that
the dispersity of the phosphors is determined by the conditions
of deposition. The method is based on the use of a special
deposition medium, which contains a small amount of phosphor.

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GUNTER, A. M., et al. Zh. vych. kh. VNI Leningradsk. i serb. khim. vakhimiy, 1970, no 5, pp 133-135

of high initial acidity (3.3-3.6 n.) of the $\text{CaSO}_4 + \text{H}_2\text{SO}_4$ solution, in almost
inert, as in the CaCl_2 spin size with a reduction in the concentration of CaCl_2
to 10^{-2} , the absence of a direct relation between the spin times of the deposits
and the initial concentration of the spin size, etc. The concentration of
concentrated solution of CaSO_4 can be appreciably reduced and the
bulk density of the solids can be increased from 1.5-1.6 to 1.8 g/cm³ by using
initially and then of the solution during spin solids deposition, and also by
building up the spin size water. Bibliography of 15 titles. Russ.

USSR

UDC: 621.373:621.317.001

KOVALYUNAS, S. Yu., BIRMANAS, Ye. M.

"Operation of an Automatic Frequency Control System With Integrating Filter and Delay in Two-Channel Wobblers"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmoreniiyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 144-146 (from Elektr. Radiotekhnika, No 12, Dec 70, Abstract No 12A327)

Translation: The authors analyze the process of difference frequency setting as well as the frequency error after termination of transient processes in two-channel wobblers which are tuned by using an auxiliary tracking oscillator with AFC system to track the frequency of the given sweep-driven oscillator. A two-channel wobbler of this type was previously analyzed without accounting for delay in the AFC circuit. The analysis in this paper relates to a wobbler with sweep drive according to a sine law. An expression is found for the maximum sweep band for which operation of the AFC system is not disrupted. A graph is presented together with formulas which can be used to calculate the parameters of an AFC system used in a two-channel wobbler for the case where the frequency of the follow-up oscillator is adjusted aperiodically. Bibliography of three titles. E. L.

1/1

USSR

BIRSHTYEN, A. A., RYASIK, E. N.

"Information Compression"

Tr. Leningr. Inzh.-Ekon. In-ta [Works of Leningrad Institute of Engineering and Economics], 1972, No 92, pp 33-41 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V649, by V. Mikheyev).

Translation: A method is suggested for compression of information discretely representing a function of many variables by elimination of repetition of identical numerical values of functions corresponding to different combinations of arguments. The essence of the method consists in creation of an ordered file of particular values of functions and arguments, in which the series of particular values of arguments are composed of a series of non-repeating particular values of functions, while the address of each particular value of a function is equal to the sum of the ordinal numbers of the arguments corresponding to it. This is achieved by establishing the regularity between the series of arguments and functions causing a change in any argument by one step to result in a change in the corresponding particular value of the function by one step. Depending on the type of error, absolute or relative, fixed in the function, and the type of the function, the method has two

1/2

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USSR

Birshteyn, A. A., Ryasik, E. N., Tr. Leningr. Inzh.-Ekon. In-ta, 1972, No 92, pp 33-41.

versions: the first calls for compression of a file of information discretely representing a function of many variables of the form a) $Y = \pm kA \pm \phi B \pm \dots \pm \gamma D$ or b) $Y = \pm A^k B^p \pm C^z$, defined with a fixed absolute error; the second calls for compression of a file of information discretely representing a function of many variables of the form $Y = A^x B^k \dots D^z$, defined with fixed relative error.

Acc. Nr: **AP0044384**

Ref. Code: UR 0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 1,
pp 118-128

INVESTIGATION OF HISTONE STRUCTURE

Ramm, Ye. I.; Birshiteyn, T. M.; Bolotina, I. A.;
Vorob'yev, V. I.; Dmitrenko, L. V.; Nekrasova, T. N.;
Vol'kenshtein, M. V.

Institute of Cytology and Institute of High-Molecular Weight
Compounds, Academy of Sciences, USSR, Leningrad
and Institute of Molecular Biology, Academy of Sciences, USSR, Moscow

The structure of four histone fractions (f_1 , $f_2(a)$, $f_2(b)$, f_3) has been studied by the methods of optical rotatory dispersion, potentiometric titration and viscometry. The analysis of the data obtained made it possible to draw a conclusion that histones are not globular proteins. The dependence of reduced viscosity on the charge of the molecule and the ionic strength of the solution showed that the dimensions of the histone molecules depend to a large extent upon the forces of electrostatic interaction. This suggests that the histone molecules are conformationally flexible and probably exhibit the conformation of a statistical coil with the incorporation of helical regions.

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The potentiometric titration curves have been obtained for all the histone fractions and have been used for calculating the number of ionizable groups, for determining their pK' and the change in the mean overall charge of the molecules with the pH alteration of the medium. The effect of pH and the ionic strength of the solution on the α -helix content of various histone fractions was studied. The data obtained were compared and a conclusion was drawn about the non-uniform distribution of the charged groups in the histone molecules. On one hand, histones contain at neutral pH coil shaped sequences enriched with basic amino acid residues with high density of the positive charge and on the other hand, regions capable to form helical structures and containing both acid and basic amino acid residues. A model is proposed describing the structure of histones.

The important differences between histone fractions were shown to exist mainly due to the distribution of the charges along the chain.

2/2

19771001

hc

1/2 023 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--CONFORMATIONAL CHARACTERISTICS OF POLYMORPHOUS OPTICALLY ACTIVE
MACROMOLECULES: A STATISTICAL ZIGZAG MODEL -U-
AUTHOR-(03)-BIRSHYTEYN, I.M., ZUBKOV, V.A., VOLKENSHTEYN, M.V.
COUNTRY OF INFO--USSR *B*
SOURCE--J. POLYM. SCI., PART A-2 1970, 8, 177-90
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--OPTIC PROPERTY, MOLECULAR STRUCTURE, MODEL, OPTIC ACTIVITY,
STEREOCHEMISTRY, FREE ENERGY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1984/0997 STEP NO--US/0000/70/003/000/0177/0190
CIRC ACCESSION NO--AP0055688
UNCLASSIFIED

USSR

SOLODOVNIKOV, V. V., ZOTOV, M. G. and BIRYKOV, V. F.

"Estimation of the Parameters of Spectral Density of an Unstable Random Process on the Basis of Its Realizations"

Izv. Vyssh. Ucheb. Zavedeniy. Priborostroyeniye [News of Higher Educational Institutions. Instrument Building], 1973, Vol 16, No 5, pp 9-13 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V191)

Translation: A class of unstable random processes is studied, produced by transmission of stable white noise through an unstable forming device. It is assumed that the structure of the spectral density is fixed, and that only certain parameters must be estimated. A system of equations is produced determining the values of the desired parameters of spectral density. It is shown that the spectral density parameters are defined with probability 1 by a single realization of the random process studied. The system of equations produced unambiguously defines the values of the desired parameters.

Author's view

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1/2 013 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--REACTION OF INDIUM WITH POLYHYDROXYFLAVONES -U-
AUTHOR-(02)-BIRYUK, YE.A., RAVITSKAYA, R.V. *B*
COUNTRY OF INFO--USSR
SOURCE--UKR. KHIM. ZH. 1970, 36(2), 120-4
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--INDIUM COMPOUND, COMPLEX COMPOUND, ABSORPTION SPECTRUM, DYE,
KETONE, HYDROXYL RADICAL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/2114 STEP NO--UR/0073/70/036/002/0120/0124
CIRC ACCESSION NO--AP0125698
UNCLASSIFIED

2/2 013


UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0125698

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN PRIME3 POSITIVE FORMS WITH QUERCITIN 2 DIFFERENT 1:1 COMPLEXES. THE 1ST, FORMED AT PH GREATER THAN 2, ABSORBS AT 435 NM AND FLUORESCES. IT IS BELIEVED TO INVOLVE IN THE IN PRIME3 POSITIVE LINKED TO THE CARBONYL AND O HYDROXYL GROUPS. THE 2ND, FORMED AT PH 6-7, ABSORBS AT 445 NM, IS BELIEVED TO INVOLVE IN(OH) PRIME2 POSITIVE BOUND TO THE CARBONYL O AND PERI HYDROXYL GROUP. IT DOES NOT FLUORESC. MORIN FORMS A COMPLEX SIMILAR TO THE FIRST. ITS ABSORBANCE WAS MEASURED AT 415 NM. RUTIN FORMS A 1:1 COMPLEX WITH IN(OH) SUB2 PRIME POSITIVE WHICH RESEMBLES THE 2ND IN STRUCTURE AND PROPERTIES; IT ABSORBS AT 430 NM. FACILITY: LAB., INST. OBSHCH. NEORG. KHIM., ODESSA, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--IONIZATION CONSTANTS OF PYROCATECHOL VIOLET IN SOLUTIONS WITH IONIC
STRENGTH--U--
AUTHOR--(CZ)--BIRYUK, YE. A., RAVITSKAYA, R. V. 
COUNTRY OF INFO--USSR
SOURCE--Zh. Anal. Khim. 1970, 25(3), 576-8
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--IONIZATION, PYROCATECHOL, IONIC BONDING, SPECTROPHOTOMETRIC
ANALYSIS, CALCULATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2055 STEP NO--UR/0075/70/025/003/0576/0578
CIRC ACCESSION NO--AP0125642
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0125642

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IONIZATION CONSTS. FOR THE OH GROUPS OF PYROCATECHOL VIOLET IN SOLNS. WITH AN IONIC STRENGTH OF 0.1-0.5-1.0 WERE DETD. BY THE SPECTROPHOTOMETRIC ISOSBESTIC POINT METHOD. EQUATIONS WERE DERIVED PERMITTING THE CALCN. OF IONIZATION CONSTS. FOR ANY IONIC STRENGTH IN THE 0-1.0 RANGE. FACILITY: LAB., INST. GEN. INORG. CHEM., ODESSA, USSR.

UNCLASSIFIED

Acc. Nr:

AP0034215

Abstracting Service:

CHEMICAL ABST. 4-70

Ref. Code:

UR 0078

B

71259p Complexing palladium(II) with α -benzil dioxime in halide and thiocyanate media. Tikhvinskaya, T. I.; Biryukov, A. A.; Shlenskaya, V. I.; Gordvinskaya, N. K. (Kafedra Anal. Khim., Mosk. Gos. Univ. im. Lomonosova, Moscow, USSR). Zh. Neorg. Khim. 1970, 15(1), 128-33 (Russ). By using competitive ligands, like Cl^- , Br^- , or SCN^- ions, stability constant ($\log \kappa_2$) of $\text{Pd(II)}-\alpha$ -benzil dioxime (HL) complex, PdL_2 , was detd. and is given as $\log \kappa_2 = 34.6 \pm 0.5$. At 20° and ionic strength = 1.0, distribution const. (λ) of PdL_2 in $\text{H}_2\text{O}-\text{C}_6\text{H}_6$ system, presented as $\log \lambda$, is 2.3 ± 0.2 . Equil. consts. (as $\log K$) of $\text{Pd}^{2+} + 2\text{HL} \rightleftharpoons \text{PdL}_2(\text{aq.}) + 2\text{H}^+$ and $\text{PdL}_2(\text{aq.}) + \text{OH}^- \rightleftharpoons \text{PdL}_2\text{OH}^-$ are 13.9 ± 0.2 and 4.8 ± 0.2 , resp. HMJR

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USSR

UDC 530.161

BAKHAREVA, I. F., and BIRYUKOV, A. A., Saratov State University imeni
N. G. Chernyshevskiy ~~USSR~~

"Stochastic Theory of Nonlinear Nonequilibrium Processes"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Fizika, No 9, 1970,
pp 58-63

Abstract: On the basis of stochastic ideas concerning the character of the course of a nonequilibrium irreversible process, the authors previously obtained dynamic equations to determine the rate of a macroscopic process for the case of a single independent variable in the entire kinetic region, including the nonequilibrium part. The present article attempts to develop the formalism previously adopted by the authors for the case of nonnonlinear processes, with allowance for their interaction, as well as to generalize it for nonlinear vector processes (heat conduction, diffusion). The example of a cyclic chemical reaction in an ideal gas is considered.

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USSR

UDC: 629.7.036.3.001.4

BIRYUKOV, A. L., KUPRIYANOV, A. V.

"Test Stand for Measurement of Thrust Components of a Reaction Engine"

USSR Author's Certificate No 366377, Filed 11/01/71, Published 23/03/73
(Translated from Referativnyy Zhurnal Aviatsionnyye i Raketnyye Dvigateli,
No 9, 1973, Abstract No 9.34.92P)

Translation: A test stand is patented for measurement of thrust components of a reaction engine, containing a horizontal platform for installation of the engine to be tested, lateral force measuring and moment measuring devices with lever-type force transmitting units, differing in that in order to eliminate lateral force from the measured torque, the lever power transmission system of the force meter for moment is connected to the end of a type-2 lever, and at distance $l_2 = l_1 L / Y_z$ from the end of this lever the lateral force meter is connected, where L_1 is the short arm of the lever, L is the distance from the axis of the test stand to the point of attachment of the moment force meter, Y_z is the distance from the axis of the motor to the point of attachment of the lateral force meter. 2 Figures.

Resume

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USSR

UDC: 621.375.82

BIRYUKOV, A. S., SHELEPIN, L. A.

"Kinetics of Physical Processes in Electrogasdynamic Lasers"

Moscow, Kinetika fizicheskikh protsessov v elektrogazodinamicheskikh lazerakh. Fiz. in-t AN SSSR (cf. English above. Physics Institute of the Soviet Academy of Sciences), Preprint No 130, 1972, 21 pp, ill., mimeo. (from RZh-Fizika, No 8, Aug 73, abstract No 8D1069 K [résumé])

Translation: An investigation is made into relaxation processes in electro-gasdynamic lasers using gasdynamic flows and electronic excitation of the working gas. Basic relations are found for the inversion maximum as a function of the parameters of the system. The paper demonstrates the effectiveness of electrogasdynamic lasers with supersonic gas flow velocities and their advantages over gasdynamic and transverse-discharge, gas-pumped lasers with low pumping speeds. A simple theory is given for gas-pumped lasers with transverse excitation. The possibilities of using atomic gases as the working fluid in electrogasdynamic lasers are discussed. Bibliography of 14 titles.

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USSR

UDC 621.365.82

BIRYUKOV, A. S., SHELEPIN, L. A.

"The Kinetics of Physical Processes in Gas Dynamic Lasers. The Effect of Nozzle Shape on Inversion. High-Temperature Lasers"

Preprint No 59, Physical Institute of the Academy of Sciences of the USSR, Moscow, 1973, 53 pp, illustrated. RZh-Fizika, No 9, Sep 1973, Abstract No 90763

Translation: The effect of the shape of a supersonic nozzle on the parameters of a gas dynamic CO₂ laser is analyzed. It is shown that each of the elements characterizing the nozzle (the half-width of the critical cross-section, the angle of opening, the length and shape of the expansion portion, the nature of the transition from subsonic flow to supersonic, etc.) has a specific effect on the kinetics of oscillatory relaxation and the degree of population inversion. Also examined are cases of high (up to approximately 4000°K) initial temperatures, considering changes in the state and gas dynamic parameters as a result of chemical reactions. It is established that equilibrium reactions do not lead to additional disequilibrium. Such disequilibrium can be obtained in the combustion of carbon-containing mixtures. Thirty-two bibliographic citations. Abstract by the author.

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BIRYUKOV, A.S.



DEPARTMENT OF THE NAVY
NAVAL INTELLIGENCE SUPPORT CENTER
TRANSLATION DIVISION
4301 SUITLAND ROAD
WASHINGTON, D.C. 20390

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R-OST/PSB
EB

CLASSIFICATION: UNCLASSIFIED

APPROVED FOR PUBLIC RELEASE, DISTRIBUTION UNLIMITED

TITLE:

Measuring the Oscillation Relaxation Time of the
CO₂ Level of CO₂ Molecules in the Temperature
Interval of 300° - 600°K

AUTHOR(S):

Izmerenye vremeni kolebatel'noy relaxatsii utovnykh
CO₂ molekuly v interval'e temperatur 300-600°K
Biryukov, A.S., Konvalikh, V.K., Lukovnikov, A.I.,
Myailin, V.A., Serikov, R.I., and Trokhov, Yu. S.

PAGES:

5

SOURCE:

Zhurnal Prikladnoy Spektroskopii, No. 2, 1972
Pages 249-252

ORIGINAL LANGUAGE: Russian

TRANSLATOR:

CRH

RISC TRANSLATION NO. 343

APPROVED P.T.K.

DATE 20 June 1973

BIRYUKOV, B. V.

Philosophical
Science

CYBERNETICS -- METHODOLOGICAL PROBLEMS

Article by Academician A. I. Pospelov, Institute of Philosophy,
Soviet Academy of Sciences, Moscow, U.S.S.R., and A. G. Spiridonov,
Moscow State University, Moscow, U.S.S.R., Vol. 11, No. 2, September
1976, pp. 3-37.

Cybernetics and philosophical methodology. The develop-
ment of the "interdisciplinary" cybernetic vision has led to
a new for systematic study of the processes of control and
of perception, thereby processing and transformation of infor-
mation connected with them. The sciences of control and data pro-
cessing are already coming through the "crucible" period in their
it was of "purely academic interest to a narrow circle of sci-
entists. Today it is becoming a very important factor in the
contemporary scientific and technical revolution, exerting a con-
siderable influence on scientific investigations, on various as-
pects of social production and its scientific foundation, on sci-
ence, information theory, logic, electronics, computing, etc.
in turn put at the disposal of cybernetics increasingly powerful
theoretical and engineering means.

Fundamental discoveries and achievements in the area of
cybernetics require a philosophical investigation. The
role of philosophical and philosophical analysis is growing
especially as a result of the rapid expansion of the scientific
for the solution of which the sciences of control and data pro-
cessing are becoming increasingly important. Philosophical investi-
gation of cybernetics is also required in connection with the fact
that the latter is becoming a factor in the development of sci-
ence, information theory, logic, electronics, computing, etc.
in turn put at the disposal of cybernetics increasingly powerful
theoretical and engineering means.

Cybernetics has already become a "natural" method of sci-
entific investigation and philosophical analysis. The sci-
ence of control and data processing is becoming a factor in the
development of science, information theory, logic, electronics,
computing, etc. in turn put at the disposal of cybernetics in-
creasingly powerful theoretical and engineering means.

1/2 049 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--DETERMINING IONOSPHERIC EFFECTS ARISING DURING THE PROPAGATION OF
RADIO WAVES FROM SPACED POINT REGISTRY OF THE FARADAY AND DOPPLER
AUTHOR--(05)-MISYURA, V.A., KROKHMALNIKOV, YE.B., ZINCHENKO, G.N.,
BIRYUKOV, G.A., GRIDIN, A.N.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, GEOMAGNETIZM I AERONOMIYA, VOL X, NO 3, 1970, PP 428-434
DATE PUBLISHED-----70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, NAVIGATION, MISSILE TECHNOLOGY
TOPIC TAGS--RADIO WAVE PROPAGATION, IONOSPHERIC DISTURBANCE, GEOPHYSIC
ROCKET, RADIO TRANSMITTER, DOPPLER EFFECT, FARADAY EFFECT, COHERENT
SIGNAL

CENTREL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAHE--3005/0349

STEP NO--UR/0203/70/010/003/0429/0434

CIRC ACCESSION NO--AP0132735

UNCLASSIFIED

2/2 049

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132735

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS PAPER DESCRIBES A METHOD FOR DETERMINING THE EFFECTS ARISING DURING RADIO WAVE PROPAGATION IN THE IONOSPHERE. THE AUTHORS GIVE INFORMATION ON VERTICAL IONOSPHERIC REFRACTION, IONOSPHERIC CORRECTIONS FOR THE OPTICAL AND GROUP PATH AND CORRECTIONS FOR THE DOPPLER SHIFT IN THE FREQUENCY OF COHERENT RADIO WAVES EMITTED BY TRANSMITTERS CARRIED ON GEOPHYSICAL ROCKETS. MORNING MEASUREMENTS WERE MADE AT FREQUENCIES OF 48 AND 144 MC-SEC IN SEPTEMBER AND OCTOBER 1965 IN THE MIDDLE LATITUDES OF THE SOVIET UNION FROM THREE STATIONS LOCATED SIMILAR TO 200 KM FROM THE ROCKET LAUNCHING POINT. THE RESULTS OF MEASUREMENTS OF THE REDUCED PHASE DIFFERENCE AND THE REDUCED DIFFERENCE IN DOPPLER FREQUENCY SHIFTS, AS WELL AS THE ROCKET SIGNAL FARADAY EFFECT AT TWO COHERENT FREQUENCIES, ARE GIVEN.

UNCLASSIFIED

BIRYUKOV, I. A.

UDC 658.1:669.3
SEVERAL PROBLEMS IN ECONOMIC REFORM AT NONFERROUS METALLURGICAL ENTERPRISES

Article by A. K. Boyev, I. A. Biryukov, North Caucasian Mining and Metallurgical Institute, Department of Organization of Production and Industrial Economics, Pribudit plant, Ordzhonikidze, Izvestiya VUZ, Tsvetnaya Metallurgiya, Russian, No 6, 1971, signed to press 6 February 1970, pp 153-158

The decisions of the September (1965) Plenum of the Central Committee of the Communist Part of the Soviet Union directed that the staffs of the industrial enterprises become interested in the development of maximally stepped-up, mobilizable plans for implementation and total utilization of industrial reserves. Accomplishment of these decisions will permit increasing the quality of the plans and accelerate their development and approval.

Successful conversion to economic reform involves solving the most important methodological and organizational questions, one of which is the construction of a valid system of economic incentives and their utilization at maximal efficiency for increasing the productivity of labor, improving the quality of the manufactured products, increasing the profitability of production, etcetera.

The basic sources for establishing types of economic incentives are wage funds and economic incentive funds, as well as prizes for mastering new techniques, for suggestions on efficiency and invention, for across metal delivery, and on results of socialist competition, etcetera.

The four-year experiment in working at the Pribudit plant under the new conditions of planning and economic incentive shows fantastic possibilities.

A system was designed at the plant for intra-plant cost accounting, for which the indices of plan, profit,

SPAS 55880

4 May 72

BIRYUKOV, I. A.

SEVERAL PROBLEMS IN ECONOMIC REFORM AT NONFERROUS METALLURGICAL ENTERPRISES

UDC 658.1.069.3

Article by A. K. Doyev, I. A. Biryukov, North Caucasian Mining and Metallurgical Institute, Department of Organization of Production and Industrial Economics. Pribludnaya, Ordzhonikidze, Izvestiya VUZ, Ispetnaya Metallurgiya, Russian, No 6, 1971, signed to press 6 February 1970, pp 153-158

The decisions of the September (1965) Plenum of the Central Committee of the Communist Part of the Soviet Union directed that the staffs of the industrial enterprises become interested in the development of maximally stepped-up, mobilizable plans for implementation and total utilization of industrial reserves. Accomplishment of these decisions will permit increasing the quality of the plans and accelerate their development and approval.

Successful conversion to economic reform involves solving the most important methodological and organizational questions, one of which is the construction of a valid system of economic incentives and their utilization at maximal efficiency for increasing the productivity of labor, improving the quality of the manufactured products, increasing the profitability of production, etcetera.

The basic sources for establishing types of economic incentives are wage funds and economic incentive funds, as well as prizes for mastering new techniques, for corrections on efficiency and invention, for extra metal delivery, and on results of socialist competition, etcetera.

The four-year experiment in working at the Pribludnaya plant under the new conditions of planning and economic incentive shows fantastic possibilities.

A system was designed at the plant for intra-plant cost accounting, for which the indices of plan, profit,

USSR

UDC 547.558.1

BIRYUKOV, I. P., and DEYCH, A. Ye., Riga Institute of the Engineers of Civil Aviation

"Investigation of Some Pentavalent Phosphorus Compounds by the Method of Nuclear Quadrupole Resonance"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, pp 1934-1936

Abstract: Several of the pentavalent phosphorus compounds of the series R,R',R'',R''' P³⁵Cl were investigated by means of nuclear quadrupole resonance method. It was shown that the axial chlorine atoms are principally responsible for the transfer of the inductive effect -- the contribution of the σ -bonds. The inductive effect of the substituents in this series of compounds is stronger than the effect in an analogous series of trivalent phosphorus.

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USSR

UDC: 547.26'118'113

BIRYUKOV, I. P., NIKONOROV, K. V., GURYLEV, E. A., DEYCH, A. Ya., Institute of Organic and Physical Chemistry, Academy of Sciences of the USSR

"Investigation of Organic Compounds of Trivalent Phosphorus R_3PCl_2 and $\text{CCl}_3\text{CCH}(\text{OH})\text{P}(\text{O})\text{RR}$ by the Method of Nuclear Quadrupole Resonance"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jul 72, pp 1223-1227

Abstract: A pulse method of nuclear quadrupole resonance was used at 77°K to study 23 organic compounds of phosphorus, R_3PCl_2 and $\text{CCl}_3\text{CCH}(\text{OH})\text{P}(\text{O})\text{RR}'$. The results are given in tables and graphs. A comparison of the nuclear magnetic resonance frequencies of organochlorophosphorus compounds and their analogs -- organylchlorosilanes -- showed that the frequencies lie along a correlation line calculated by the least sum method:

$$\nu_m(\text{P}-\text{Cl}) = -2.40 + 1.5\nu_m(\text{Si}-\text{Cl}) \pm 0.15. \quad (1)$$

A comparison of the experimental and theoretical values of ν_m shows that molecules containing alkoxy groups or those without an organic radical deviate from the correlation line. It was also found that the frequencies of nuclear quadrupole resonance increase with an increase in the number of methyl groups in the molecule.

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USSR

UDC 669.721.48(088.8)

BIRYUKOV, L. V., MIRONOV, A. M., SERGEYEV, V. V., POLYAKOV, Yu. A., and ZABOYEV, Yu. I.

"Method of Processing Wastes"

USSR Author's Certificate No 273441, Filed 13/08/66, Published 7/09/70
(Translated from Referativnyy Zhurnal-Metallurgiya, No 2, 1971, Abstract No 2 G190 P)

Translation: A method is suggested for processing wastes from the production of Mg to carnallite and Cl₂, including absorption of hydrogen chloride by water, absorption of chlorine by lime producing HCl and CaCl₂, decomposition of the calcium chloride by the hydrochloric acid, producing concentrated Cl₂ and a CaCl₂ solution, addition of MgO and carbonization, separation of the MgCl₂ solution produced from the CaCO₃, addition of spent electrolyte, and evaporation and dehydration of the solution to separate the carnallite. To increase the extraction of concentrated Cl₂, the chlorinated CaO is decomposed at pH 2-3 at a residual pressure in the apparatus of 10-20 mm Hg, while the spent electrolyte is introduced into the MgCl₂ solution in melted form by spraying.

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- 21 -

USSR

UDC 533.92:621.039.61

ALEKSIN, V. F., BIRYUKOV, O. V., VISHNEVETSKIY, V. N., GEORGIYEVSKIY, A. V., GROT, Yu. I., DIKIY, A. G., ZISER, V. Ye., KITAYEVSKIY, L. KH., KONOTOP, P. I., POGOZHEV, D. P., PELETMINSKAYA, V. G., SERGEYEV, Yu. F., SMIRNOV, V. G., SUPRUNENKO, V. A., TOLOK, V. T., and TARAN, V. M.

"Development and Synthesis of the "Uragan" Stellarator and Investigation of Magnetic Surfaces of High Shear"

Kiev, Fizika Plasmy i Problemy Upravlyayemogo Termoyadernogo Sinteza (Plasma Physics and Problems in Controlled Thermonuclear Synthesis -- collection of works) "Naukova dumka," No 3, 1972, pp 73-112

Abstract: After an initial section devoted to a review of the literature on the magnetic surfaces of toroidal stellarators and the principles of stellarators in general, the authors analyze the "Uragan" specifically. In particular, this paper is concerned with the problems involved in choosing the parameters of the magnetic system for the racetrack stellarator to obtain magnetic surfaces with high shear. This last term is defined as the extent of crossing of the magnetic lines of force. The synthesis and adjustment of the magnetic system are also examined, and
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USSR

ALEKSIN, V. F., et al., Fizika Plasmy i Problemy Upravlyayemogo Termoyadernogo Sintez, "Naukova dumka," No 3, 1972, pp 73-112

the results are given of an investigation into the instrument's magnetic surfaces. Computations worked out on an electronic computer for the design of the magnetic system are described, and differences between the "Uragan" and the "Sirius" stellarators are indicated. A comparative table of the parameters for various types of stellarator is given; it shows that the "Uragan" is one of the more powerful thermonuclear machines, with a high shear value for its substantial 10 koeersted magnetic field intensity. This article is liberally illustrated with photographs and line drawings and has a bibliography of 51 titles.

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USSR

UDC 533.951.7/.8

ALEKSIIN, V. F., BIRYUKOV, O. V., VISHNEVETSKIY, V. N., GEORGIYEVSKIY, A. V., GROT, Yu. I., DIKIY, A. G., ZISER, V. Ye., KITAYEVSKIY, L. Kh., KONOTOP, P. I., POGOZHEV, D. P., PELETMINSKAYA, V. G., SERGEYEV, Yu. F., SMIRNOV, V. G., SUPRUNENKO, V. A., TOLOK, V. T., TARAN, V. M.

"Development and Creation of the "Uragan" Stellarator Magnetic System and Study of High-Shear Magnetic Surfaces"

Fiz. Plazmy i Probl. Upravl. Termoyader. Sintez. Resp. Mezhved. Sb. [Plasma Physics and Problems of Controlled Thermonuclear Synthesis. Republic Inter-departmental Collection], No 3, 1972, pp 73-112, (Translated from Referativnyy Zhurnal, Mekhanika, No 11, 1972, Abstract No 11 B178 by the author's).

Translation: This work is dedicated to the study of the magnetic system of the three-pass "Uragan" stellarator. A report is presented on the selection of the optimal parameters of the magnetic system of the stellarator. The "Uragan" complex is briefly described. Experimental studies of magnetic surfaces using low-energy electron beams have shown that the "Uragan" stellarator with individually controllable cylinders produces closed magnetic surfaces with high shear values (≈ 0.09) and high rotary conversion angle

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USSR

UDC 533.951.7/.8

ALEKSIN, V. F., BIRYUKOV, O. V., et. al., Fiz. Plazmy i Probl. Upravl.
Termoyader. Sinteza. Resp. Mezhved. Sb., No 3, 1972, pp 73-112.

($\approx 240^\circ$). The experimental data are compared with calculated data produced
on the BESM-6 computer. 51 Biblio. Refs.

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USSR

UDC 533.92:621.039.61

ALEKSIN, V. F., BIRYUKOV, O. V., VISHNEVETSKIY, V. N., GEORGIYEVSKIY, A. V., GROT, Yu. I., DIKIY, A. G., ZISER, V. Ye., KITAYEVSKIY, L. Kh., KONOTOP, P. I., POGOSHEV, D. P., PELETNINSKAYA, V. G., SERGEYEV, Yu. F., SMIRNOV, V. G., SUPRUNENKO, V. A., TOLOK, V. T., TARAN, V. M.

"Development and Production of the Magnetic System of the 'Uragan' Stellarator and a Study of Magnetic Surfaces With Large Shear"

Fiz. plazmy i probl. upravl. termovader. sinteza. Resp. mezhved. sb.
(Plasma Physics and Problems of the Controlled Thermonuclear Fusion. Republic Interdepartmental Collection), 1972, No. 3, pp 73-112 (from RZh-Fizika, No 11, Nov 72, Abstract No 11G279)

Translation: This paper concerns the study of the magnetic system of the three-loop "Uragan" stellarator-racetrack. Considerations concerning the selection of optimal parameters of the magnetic system of the stellarator are discussed. The equipment of the "Uragan" is briefly described. An experimental study of the magnetic surfaces made with the aid of low-energy electron beams showed that in the "Uragan" stellarator-racetrack with

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ALEKSIN, V. F., et al, Fiz. plazmy i probl. upravl. termoyader. sinteza.
Resp. mezhved. sb., 1972, No. 3, pp 73-112

individually controlled cylinders there are closed magnetic surfaces with high shear values (~ 0.09) and angle of rotational conversion ($\sim 240^\circ$). The experimental data are compared with calculated values obtained on the BESM-6 computer.

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USSR

B

UDC 621.039.623

ALEKSIN, V. F., BIRYUKOV, O. V., GEORGIYEVSKIY, A. V., KITAYEVSKIY, L. KH., KOMAR, YE. G., LUGINOV, A. S., MALYSHEV, I. F., MONOSZON, N. A., POPKOVICH, A. V., ROZHDESTVENSKIY, B. V., SAKSAGANSKIY, G. L., SINEL'NIKOV, the late K. D., SOKOLOV, YU. A., SUPRUNENKO, V. A., TOLOK, V. T., CHURAKOV, G. F., and SHABEL'NIKOV, L. A.

"The Experimental Thermonuclear Device 'Uragan'"

Moscow, Atomnaya Energiya, Vol 28, No 1, Jan 70, pp 22-28

Abstract: An urgent task of stellarator research is a definitive elucidation of the reasons for anomalous diffusion in a stellarator, as well as the effect of the shear and magnetic well on the confinement of a hot and dense plasma. These questions will be studied on the "Uragan" stellarator. Construction of the "Uragan" stellarator was begun at the suggestion of I. V. KURCHATOV and completed in 1967. The physical substantiation and technical assignment of developing and constructing the complex were developed at the Physicotechnical

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ALEKSIN, V. F., et al., Atomnaya Energiya, Vol 28, No 1, Jan 70, pp 22-28

Institute of the Academy of Sciences Ukrainian SSR under the direction of K. D. SINEL'NIKOV, who took an active part in the solution of theoretical and technical questions. Organizations taking part in the development of the project and the construction of the complex included the Scientific Research Institute of Electrophysical Equipment imeni D. V. Yefremov, the Elektrosila Electrical Engineering Combine, the Khar'kov Polytechnic Institute imeni V. I. Lenin, the Electromechanical Plant and NII Elektroapparat [Scientific Research Institute of Electrical Equipment] in Khar'kov. A considerable amount of work on the development, manufacture, and adjustment of the systems and components of the "Uragan" was done at the Physicotechnical Institute of the Academy of Sciences Ukrainian SSR.

The principal feature of the "Uragan" is high shear (of the order of 0.02 and 0.1) at a high level of magnetic field strength

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ALEKSIN, V. F., et al., Atomnaya Energiya, Vol 28, No 1, Jan 70, pp 22-28

H_0 (35 and 10 koe respectively). The stellarator is in the shape of a racetrack and uses a high-shear triplex helical field. The vacuum chamber of the trap consists of two semi-tori with an average radius $R = 1100$ mm and two rectilinear sectors, each 1725 mm long. The internal diameter of the chamber is 200 mm. On the outside of the chamber on the toroidal sectors are two helical windings and longitudinal magnetic field coils, distributed evenly along the device. The maximum strength of the magnetic field is 10 koe under steady-state conditions and 35 koe under pulsed conditions. Three windings are used; viz., longitudinal magnetic field, helical, and transverse magnetic field. All metallic elements are made of low-magnet steel 1Kh18N9T. The toroidal sectors of the vacuum chamber and part of the rectilinear sectors are made of stainless nonmagnetic alloy EP-125. The article gives a detailed description of the windings, cooling system, electric power supply system, vacuum system, and plasma diagnostic and heating system.

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1/2 016 UNCLASSIFIED PROCESSING DATE--090CT70
TITLE--EXPERIMENTAL THERMONUCLEAR DEVICE URAGAN -U-
AUTHOR-(03)-ALEKSIN, V.F., BIRYUKOV, O.V., GEORGYEVSKIY, A.V.
COUNTRY OF INFO--USSR **B**
SOURCE--AT. ENERG. (USSR); 28: 22-8 (JAN 1970)
DATE PUBLISHED---JAN70

SUBJECT AREAS--PHYSICS
TOPIC TAGS--HIGH TEMPERATURE PLASMA, PLASMA CONFINEMENT, STELLARATOR

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1979/1816 STEP NO--UR/0089/70/028/000/0022/0028
CIRC ACCESSION NO--AP0048119
UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AP0048119
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONSTRUCTIVE AND TECHNOLOGICAL
FEATURES OF THE STELLARATOR "URAGAN" AND EXPERIMENTAL APPARATUS FOR HIGH
TEMPERATURE PLASMA CONFINEMENT RESEARCH ARE DESCRIBED.

UNCLASSIFIED

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USSR

UDC 681.325.65

BIRYUKOV, S.A.

"An Invertor"

USSR Author's Certificate No. 275123, Filed 8/12/68, Published 6/10/70 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No. 4, 1971, Abstract No. 4B189P).

Translation: Invertors containing an input multiemitter transistor, an intermediate transistor, and an output stage made of two series-connected transistors, with a diode connected in the emitter circuit of one of these transistors to assure reliable blocking, are well known. Reliable operation of this invertor in the temperature range from -60 to $+120^{\circ}\text{C}$ requires a supply voltage of 5V. The invertor suggested differs in that in order to decrease the supply voltage a resistor is connected between the base of one of the transistors of the output stage and the collector of the intermediate transistor, and the collector of an additional transistor is connected to the point of connection of the resistor and the base of the output transistor, the emitter of the additional transistor being connected to the point of connection of the emitter and collector of the output transistors, while the base of the additional transistor is connected through a resistor to the base of the intermediate transistor. 1 fig.

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USSR

UDC: 624.131.531.5

SHEYNIN, V. I. and BIRYUKOV, S. K.

"Load Distribution in Multi-Support Underground Structures where the Supports Have Differing Characteristics"

Moscow, Osnovaniya, fundamenty i mekhanika gruntov, No 3, 1971, pp 22-24

Abstract: The authors solve a problem associated with load distribution on elastic supports which lie between basement rock and ponderable, higher lying elastic rock masses. An instance is considered where the rigidity, width of supports, and the distance between supports can be various. The load applied to the boundaries of the elastic masses is represented in the form of a Fourier transform. The equations for determining loads are found on the basis of geometric conditions and are supplemented by an equilibrium equation. An M-220 electronic computer using a specially prepared program was used to verify the accuracy of the proposed solution. Original article: two tables, one figure, 17 formulas, and six bibliographic entries.

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Conferences

USSR

BIRYUKOV, V. A.

"Twenty-Eighth Session of the Scientific Council of the Joint Institute of Nuclear Research"

Moscow, Atomnaya Energiya, Vol 30, No 1, Jan 71, pp 73-76

Abstract: Dubna was the site of the 28th Session of the Scientific Council of the Joint Institute of Nuclear Research held in June, 1970. The session was opened by Academician N. N. BOGOLYUBOV, Director of the Institute. Ye. D. VOROB'YEV discussed the possibilities of producing monochromatic beams of particles in the U-200 accelerator. V. P. DMITRIYEVSKIY proposed the development of a proton cyclotron with a controlled energy up to 40 Mev on the basis of the U-200 accelerator magnet. NGUEN DIN TY and I. M. GRAMENITSKIY reported on possibilities and programs of physics research in the 2-meter propane bubble chambers installed in the accelerator at Serpukhov, and liquid hydrogen, the testing of which will be done in Dubna. YU. K. AKIMOV reported on studies for standardizing electronic equipment at the Joint Institute of Nuclear Research (JINR) and participating institutes.

G. V. YEFIMOV presented results from studying the non-local quantum theory
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USSR

BIRYUKOV, V. A., Atomnaya Energiya, Vol 30, No 1, Jan 71, pp 73-76

of a single-component scalar field. V. G. SOLOV'YEV discussed the development of a method of self-congruent field in nucleu theory. In this research N. N. BOGOLYUBOV formulated a method of a self-congruent field. K. D. TOLSTOV reported on investigations on the interaction of π^- -mesons at energies of 45 and 60 Mev with the aid of photo-emulsions irradiated in the Serpukhov accelerator.

I. A. SAVIN discussed experiments on the regeneration of K^0 -mesons in the accelerator of the Institute of High Energy Physics. The studies were made with the use of magnetostrictive chambers and scintillation counters operating with a BESM-3M computer. Recorded data were then processed in Dubna on BESM-6 and SDS-1604A computers.

The report of L. L. NEMENOV was devoted to synchrocyclotron studies of $\pi^-p \rightarrow n e^+ e^-$ reactions at meson energies of 275 Mev. V. G. ZINOV discussed the spectra of charged particles emitted in the capture of negative muons by nuclei. Results of the synthesis and investigation of the spontaneously fissionable isotope of Americium were reported by Yu. Ts. OGANESYAN.

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BIRYUKOV, V. A., Atomnaya Energiya, Vol 30, No 1, Jan 71, pp 73-76

I. ZVARA discussed the chemical identification of the 105th element by gas-adsorptive separation of element chlorides. V. I. MOROZ, representing the Scientific Council, reported on the development of a new program for geometric reconstruction (GEOM-7) for propane and hydrogen bubble chambers. The reconstruction of space coordinates is being done on a BESM-4 system using FORTRAN.

G. I. ZABIYAKIN reported on the development of computer technology at JINR. The Institute has the following computer systems: a BESM-6, five BESM-4 computers, a Minsk-2 and a Minsk-22, and an SDS-1604A.

V. T. RUDENKO discussed the redesigning of an impulse reactor for fast neutrons and the construction of a new reactor -- the IBR-30 -- at JINR. The main goal for redesigning the IBR-1 reactor was to increase the average power and expand capabilities of experimental units. The IBR-30 has a linear neutron accelerator as the injector and can operate in different modes. It is connected with reactors of several types: the "Godiva" single-pulse reactor, an IBR-1 reactor, a low-frequency reactor, a pulse
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BIRYUKOV, V. A., Atomnaya Energiya, Vol 30, No 1, Jan 71, pp 73-76

booster, and a pulse super booster. F. L. SHAPIRO reviewed research done at JINR with ultra-cold neutrons.

The Scientific Council bestowed awards to JINR for works done in 1969. The first prize for scientific research was given to the authors of the work, "Measurement of the Slope Parameter for the Differential Cross Section of Elastic pp-Scattering in the 12-70-Gev Energy Interval"; second prize went to the author of "Theory of Intra-Nuclear Cascades at High and Ultra-High Energies." For scientific methods first prize was given to the authors of "The IBR-30 Research Reactor"; second prize -- to the authors of "New Method of Particle Recording -- The Proportional Chamber," "Methods of Producing Highly Active Rare-Earth Element Preparates for Nuclear Spectroscopy," and "The BESM-6 System With a FORTRAN Translator."

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- 7 -

USSR

B
UDC 621.373.421.13:621.372.412

ANDROSOVA, V. G., BIRYUKOV, V. I., POZDNYAKOV, P. G.

"Quartz Resonators with AT-Cut Piezoelements of Rectangular Shape"

Elektron. tekhnika. Nauchno-tekhn. sb. (Electronic Engineering. Scientific and Technical Collection), 1970, ser 9, vyp. 2, pp 33-39 (from RZh-Radio-tekhnika, No 9, Sep 70, Abstract No 9D278)

Translation: This article contains the results of investigations of the shape of the oscillations of rectangular AT-cut piezoelements and also the distribution of bias with respect to their surface. The arrangement of the minimum bias points attachment at which introduces insignificant damping are determined. The possibilities of selecting the relations of the dimensions of the piezoelements and their effect on the spectral and temperature characteristics are discussed. Results of measuring the resonator parameters with wire attachment confirming the possibilities of a significant improvement in the resonator parameters on frequencies below 1,000 kilohertz are presented. There are eight illustrations and a five-entry bibliography.

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USSR

UDC: 621.396.69:621.372.412

ANDROSOVA, V. G., BIRYUKOV, V. I.

"An AT-Section Quartz Piezoelectric Element"

USSR Author's Certificate No 267703, filed 18 Apr 68, published 8 Jul 70
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1V352 P)

Translation: This Author's Certificate introduces an AT-section quartz piezoelectric element made in the form of a rectangular plate which is longer in the direction of the X-axis of the crystal. To suppress side resonances, the length of the piezoelectric element is related to the thickness by the following expression:

$$l_x = 1.61Sn + 2.576S,$$

where l_x is the length of the piezoelectric element, S is the thickness of the piezoelectric element, and n is a whole number.

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USSR

UDC: 621.396.6-181.5

BIRYUKOV, V. K., LIKHOVETSKIY, B. P.

"Making Contact Between Microelements in Flat Micromodules"

V sb. Obmen opytom v radioprom-sti (Experience Pooling in the Radio Industry --collection of works), vyp. 1, Moscow, 1971, pp 50-51 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V161)

Translation: The paper deals with problems of making contact joints between microelements by the method of cementing with a current-conducting composition (contactol). It is shown that when the set standards for preparing the contactol are met and the material is properly used, contact joints can be made which are as reliable as soldered joints. Resumé.

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USSR

UDC: 621.396.6-181.5

BIRYUKOV, V. K., LIKHOVETSKIY, B. P.

"Preparation of Contactol and Making Contactol Joints"

V sb. Obmen opytom v radioprom-sti (Experience Pooling in the Radio Industry --collection of works), vyp. 1, Moscow, 1971, pp 48-49 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V160)

Translation: The available experience on mounting microcircuits of various types and the results of lengthy and exhaustive testing of these circuits are taken as a basis for developing technological processes of preparing contactol and making contactol microcircuit joints. Resumé.

1/1

BIRYUKOV

V.M.

50: JPRS 59379
14 June 73

MECHANISM OF AUTOEPITAXIAL GROWTH OF SILICON FROM THE VAPOR-GAS MIXTURE
($SiCl_4 + H_2 + 3Cl_2$) IN THE OPEN PROCESS

By: S. V. Gerasimov, D. N. Gerasimov

[Article by Yu. D. Chistyakov, A. Yu. Malinin, V. M. Biryukov, Novosibirsk,
Prosemyayevskiy Institut Khimicheskoy Fiziki, Novosibirsk, Novosibirskiy
Izdatel'stvo Khimicheskoy Literatury, 1969, pp. 21-22]

Introduction

The existing concepts of the growth of autoepitaxial layers of silicon
can not give an answer to a number of the problems of practical importance
advanced by epitaxial technology. Inasmuch as the method of obtaining
epitaxial layers of silicon by reducing it with hydrogen from halides in the
open process has been most developed, and it is widely used in epitaxial
technology, without a doubt any efforts more precisely to define the mechanism
of the epitaxial process are expedient.

The mechanism of autoepitaxy of silicon discussed earlier [1, 2] in
general relations was based on the assumption of the existence of a continuous
thin layer of liquid phase coating the surface of the substrate and participating
in the process of growth of the autoepitaxial layer of silicon.

The epitaxial layer is formed in accordance with the phase equilibrium
diagram of the $Si-O_2-H_2$ system [3] is the alloying additive, Si is a
random admixture. This layer differs with respect to composition and mechanism
of formation from the layers of the liquid phase which were discussed in the
papers by Wagner, et al. [3, 4], Fiksy and Nielsen [5], and so on.

The VL (vapor-liquid-solid state) mechanism proposed by these authors
provides for the presence of a specially applied layer of one of the metals
forming the liquid alloy eutectic point with the substrate. When the silicon
autoepitaxial layer of the silicon on the liquid phase-substrate interface
taken place.

The purpose of this paper is to confirm the reality of the existence of
the liquid oxygen-containing phase occurring spontaneously during the process

USSR

UDC 539.4:624.012

BIRYUKOV, V. M., TRIPPEL', A. V.

"Strength and Deformability of the Prefabricated Monolithic Reinforced Concrete Complex of the Tadzhik Framework"

Tr. Tadzh. politekhn. in-ta (Works of the Tadzhik Polytechnical Institute), 1970, vyp. 5, pp 109-121 (from RZh Mekhanika, No 10, Oct 70 Abstract No 10 V885)

Translation: The structural scheme of the Tadzhik framework is solved in the form of two five-story prefabricated monolithic rigid space frames with hanging panels made of light concrete. The column grid is 3×6 m. The spans are made of reinforced concrete slabs with edges up, dimensioned in the plan view for the room. The extreme edges of the slab are connected to the monolithic cross bar fittings by means of protruding stubs of the reinforcing. The concrete is type 200, and the reinforcing is round, periodic profile classes A P and A P1. The structural design used makes the prefabricated-monolithic structure as close to monolithic as possible. This is especially important in seismic regions. The rigidity and strength of the buildings in the longitudinal and transverse

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USSR

BIRYUKOV, V. M., et al., Tr. Tadzh. politekhn. in-ta, 1970, vyp. 5,
~~pp 109-121~~

directions are insured by creation of rigid frame assemblies at the joints of the uprights with the cross bars and spans monolithically connected to the cross bars.

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Acc. Nr: **AP0036811**

B

Ref. Code: UR 0016

PRIMARY SOURCE: Zhurnal Mikrobiologii, Epidemiologii, i
Immunobiologii, 1970, Nr 1, pp 26-30

CULTIVATION OF SALMONELLAE OF TYPHOID FEVER
ON SYNTHETIC NUTRIENT MEDIUM

I. M. Gruber, V. V. Biryukov, K. D. Gnuni, F. I. Aptekarcva

The authors modified the full value amino acid medium by replacement of triptophane with its precursor — indol (0.1 g/l), and of asparagic acid — with urea (0.86 g/l). By the indices of reproduction the modified nutrient medium was not inferior to the initial, but was even somewhat superior to it by growth indices. Replacement of the two deficient expensive amino acids offered a possibility of cutting in two the cost of the nutrient medium.

A method of orthogonal Latin rectangles was used in this work; it offered a possibility of establishing the range of changes in the concentration of components, capable of providing the optimal rate of reproduction of typhoid bacilli, by a small number of experiments.

D.M.

6

1/2 015 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--COMPARISON OF EXPERIMENTAL AND THEORETICAL VALUES OF BRANCHING
RATIOS K-BETA POSITIVE FOR ALLOWED GAMOW TELLER TRANSITIONS -U-
AUTHOR-(02)-BIRYUKOV, YE.I., SHIMANSKAYA, N.S.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(2), 246-51

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, METHODS AND EQUIPMENT

TOPIC TAGS--SPECTROSCOPIC ANALYSIS, GAMMA SPECTROMETER, BETA SPECTROMETER,
VANADIUM, COBALT, LANTHANUM, PRASEODYMIUM, NEODYMIUM, SAMARIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1980/1320

STEP NO--UR/0367/70/011/002/0246/0251

CIRC ACCESSION NO--AP0049482

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0049482

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BRANCHING RATIOS WERE DETD. BY USING A 4 PI SCINTILLATION GAMMA SPECTROMETER AND A SCINTILLATION BETA SPECTROMETER FOR 6 ALLOWED TRANSITIONS IN PRIME48 V, PRIME58 CO, PRIME134 LA, PRIME140 PR, PRIME141 ND, AND PRIME143 SM. EXPTL. AND THEORETICAL RESULTS, RESP., SHOW: PRIME48 V 0.69 PLUS OR MINUS 0.04, 0.689 PLUS OR MINUS 0.014; PRIME58 CO 4.94 PLUS OR MINUS 0.08, 5.12 PLUS OR MINUS 0.25; PRIME134 LA 0.40 PLUS OR MINUS 0.04, 0.436 PLUS OR MINUS 0.030; PRIME140 PR 0.74 PLUS OR MINUS 0.03, 0.839 PLUS OR MINUS 0.030; PRIME141 ND 28 PLUS OR MINUS 1, 33.8 PLUS OR MINUS 3; AND PRIME143 SM 0.92 PLUS OR MINUS 0.09, 0.929 PLUS OR MINUS 0.040. EXCHANGE CORRECTIONS WERE ACCOUNTED FOR IN BOTH THE EXPTL. AND THEORETICAL RESULTS. THE INTERFERENCE FIERZ PARAMETER WAS CALCD. AS MINUS 0.020 PLUS OR MINUS 0.009. PUBLISHED EXPTL. DATA ON BRANCHING RATIOS FOR SMALLER AT. NOS. ARE ALSO ANALYZED.

1/2 015 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--COMPARISON OF EXPERIMENTAL AND THEORETICAL VALUES OF BRANCHING
RATIOS K-BETA POSITIVE FOR ALLOWED GAMOW TELLER TRANSITIONS -U-
AUTHOR-(021)-BIRYUKOV, YE.I., SHIMANSKAYA, N.S.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(2), 246-51

DATE PUBLISHED-----70

B

SUBJECT AREAS--CHEMISTRY, METHODS AND EQUIPMENT

TOPIC TAGS--SPECTROSCOPIC ANALYSIS, GAMMA SPECTROMETER, BETA SPECTROMETER,
VANADIUM, COBALT, LANTHANUM, PRASEODYMIUM, NEODYMIUM, SAMARIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1980/1320

STEP NO--UR/0367/70/011/002/0246/0251

CIRC ACCESSION NO--AP0049482

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0049482

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BRANCHING RATIOS WERE DETD. BY USING A 4 PI SCINTILLATION GAMMA SPECTROMETER AND A SCINTILLATION BETA SPECTROMETER FOR 6 ALLOWED TRANSITIONS IN PRIME48 V, PRIME58 CG, PRIME134 LA, PRIME140 PR, PRIME141 ND, AND PRIME143 SM. EXPTL. AND THEORETICAL RESULTS, RESP., SHOW: PRIME48 V 0.69 PLUS OR MINUS 0.04, 0.699 PLUS OR MINUS 0.014; PRIME58 CG 4.94 PLUS OR MINUS 0.08, 5.12 PLUS OR MINUS 0.25; PRIME134 LA 0.40 PLUS OR MINUS 0.04, 0.436 PLUS OR MINUS 0.030; PRIME140 PR 0.74 PLUS OR MINUS 0.03, 0.839 PLUS OR MINUS 0.030; PRIME141 ND 28 PLUS OR MINUS 1, 33.8 PLUS OR MINUS 3; AND PRIME143 SM 0.92 PLUS OR MINUS 0.09, 0.929 PLUS OR MINUS 0.040. EXCHANGE CORRECTIONS WERE ACCOUNTED FOR IN BOTH THE EXPTL. AND THEORETICAL RESULTS. THE INTERFERENCE FIERZ PARAMETER WAS CALCD. AS MINUS 0.020 PLUS OR MINUS 0.009. PUBLISHED EXPTL. DATA ON BRANCHING RATIOS FOR SMALLER AT. NOS. ARE ALSO ANALYZED.

BIRYUKOVA, F. G.

TECHNICAL TRANSLATION

FSTC-RT-23-16-72

ENGLISH TITLE: The Uniqueness Theorem for the First Boundary Value Problem of the Heat Conduction Equation With a Discontinuous Coefficient

FOREIGN TITLE: Теорема Единственности для Первой Краевой Задачи Уравнения Теплопроводности с Разрывным Коэффициентом

AUTHOR: Biryukova, F. G.
www.fstc.org/RT/23-16-72/Biryukova-F-G

SOURCE: Akademiya Nauk Kazakhskoy SSR, Izvestiya, Seriya Fiziko-matematicheskaya Vol. 8, May-June 1970, p. 38-44

Translated for FSTC by Leo Kanner Associates, Redwood City, Ca.

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USSR

UDC 51.621.391

BIRYUKOVA, L. A., KUDRYAVTSEV, V. B.

"The Completeness of Functions with Delays"

Probl. Kibernetiki [Problems of Cybernetics -- Collection of Works], No. 23, Moscow, Nauka Press, 1970, pp 5-25 (Translated from Referativnyy Zhurnal Kibernetika, No. 4, April, 1971, Abstract No. 4 V490 by G. Blokhina).

Translation: Conditions of completeness are studied for one class of automata without feedback -- functions with delays (RZhMat, 1963, 7V288). Let 1P_2 be the set of all logic algebra functions (laf) with delays not exceeding 1, i. e., pairs (f, t) , where f is an laf, t is a natural number not exceeding 1. The set M_{P_2} is called 1-complete if by using the operations of "synchronous superposition" based on the elements of set M it is possible to produce any laf with delay 1. Conditions are studied which must be satisfied by 1-complete systems. It is demonstrated that in the general case some classes in 1P_2 are not expanded to 1-subcomplete, i. e., two systems which, without being 1-complete, forms an 1-complete system with any pair (f, t) which does not belong to it. This means that the criterion of 1-completeness in this case cannot be formulated in terms of nonmembership in all 1-subcomplete classes. This fact is correct for all $l > 1$. The case of 1-completeness is particularly fully studied. It is demonstrated that a finite system is 1-complete if and only if it does not belong to a

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UDC 51.621.391

BIRYUKOVA, L. A., KUDRYAVTSEV, V. B., Probl. Kibernetiki, No. 23, Moscow, Nauka Press, 1970, pp 5-25.

certain finite number of 1-subcomplete classes and three strictly increasing chains of closed classes, none of which are contained in any of the 1-subcomplete classes. This indicates, in particular, the existence of an algorithm establishing 1-completeness of any finite system of functions with delays. It is demonstrated that, generally speaking, it is not always possible to separate a finite and also an 1-complete system from any 1-complete system, and that the power of the set of closed classes in $1p_2$ is equal to a continuum. A number of other properties of this functional system are also established.

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USSR

UDC 612.833

BIRYKOVA-YEROGINA, M. A., Chair of Physiology, Georgian State Institute of Physical Culture, Tbilisi

"Changes in the Tonic Reflex Movement of an Extremity Upon Repeated Vestibular Stimulation"

Leningrad, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenova, Vol 58, No 1, Jan 72, pp 28-34

Abstract: The effects of repeated rotation of cats in a sagittal plane on the tonic reflex movement of a front leg were studied. As the number of rotations was increased, the amplitude of movement of a forepaw decreased by 50% within a few days during which 40-80 rotations were carried out. The decrease in the amplitude of movement developed gradually as a result of the sum of stimulations received during individual rotations. It was independent of the intervals between rotations and was retained for a prolonged period of time (2-3 mos). Stimuli of a different type (light or sound applied during the rotations) or changes in the intensity or direction of rotations brought about an almost complete restoration of the initial amplitude of movement. After the movement of a paw was weakened by applying rotations of the body in one direction, the amplitude of movement resulting from rotation in the opposite direction was reduced more rapidly - i.e., there was a certain amount of

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USSR

BIRYUKOVA-YEROGINA, M. A., Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenova, Vol 58, No 1, Jan 72, pp 28-34

transfer of habituation to rotation in the opposite direction. One may assume that the reduction in the amplitude of the motor reaction (habituation) was due to inner cortical inhibition. The relations established are of value from the standpoint of improving the effectiveness of athletic training.

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USSR .

UDC 681.332.65

POLYAKOV, YU. A., BIRYUKOVA-SAVICHEVA, N. V., and KOROLEV, O. I.

"Generator of Random Numbers Following a Given Distribution Law"

[Tr.] Mosk. in-t neftekhim. i gaz. prom-sti ([Works] of Moscow Institute of the Petrochemical and Gas Industry), 1971, vyp. 92, pp 325-330 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 5, May 72, Abstract No 5R202 by V. R.)

Translation: The article describes a random-number generator designed for use in the digital-computer solution of problems by the Monte Carlo method. The generator is an electronic circuit consisting of two principal functional parts: a generator of random numbers following a uniform distribution law and a functional converter. The random-number generator has five identical channels, each of which is designed to produce one random bit sign. The noise generator is a three-stage amplifier of the transistor noise. The random value of the binary variable is formed on a flip-flop with a complementing input, which receives a random number of pulses determined by the noise envelope. Random codes are converted to analog voltages, which are fed to a diode nonlinearity block, where the given functional dependence is realized.

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POLYAKOV, YU. A., et al., [Tr.] Mosk in-t neftekhim i gaz. prom-sti, 1971, vyp. 92, pp 325-330

Errors not exceeding 1-2 percent are obtained for many distribution laws (including the exponential and Rayleigh laws). Two illustrations. Bibliography with five titles.

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1/2 028

UNCLASSIFIED

PROCESSING DATE--13NOV70

TITLE--ABSORPTION OF NITROGEN BY A CONTINUOUSLY RENEWED TITANIUM FILM -U-

AUTHOR--(03)-BIRYUKOVA, N.YE., VINOGRADOV, M.I., YEFIMOV, M.N.

COUNTRY OF INFO--USSR

SOURCE--ZHUR. FIZ. KHIM., JAN. 1970, 44, (1), 145-149

DATE PUBLISHED----JAN70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--NITROGEN, ABSORPTION, TITANIUM, SURFACE PROPERTY, CHEMICAL
REACTION MECHANISM, METAL FILM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/0247

STEP NO--UR/0076/70/044/001/0145/0149

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UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0124009

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MECHANISMS RESPONSIBLE FOR THE ABSORPTION OF N BY A TI FILM WERE STUDIED, THE FILM BEING CONTINUOUSLY RENEWED IN ORDER TO PREVENT THE ACCUMULATION OF OXIDES AND OTHER REACTION PRODUCTS. BETWEEN MINUS 196 AND PLUS 200 DEGREES C THE MECHANISM WAS AS FOLLOWS: (I) N MOLECULES WERE PHYSICALLY ADSORBED ON THE SURFACE OF THE FILM; (II) THE PHYSICALLY ADSORBED MOLECULES WERE THEN CONVERTED INTO THE MOLECULAR CHEMISORBED STATE, RETAINING THE MOBILITY OF CHEMISORBED MOLECULES; AND (III) THE MOLECULES WERE THEN CONVERTED INTO AN ATOMIC CHEMISORBED STATE, WITH THE FORMATION OF AN ADSORBED LAYER FIRMLY ATTACHED TO THE SURFACE.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--SOME CHEMICAL PROPERTIES OF MOLYBDENUM GERMANIDE POWDER -U-
AUTHOR-(02)-POPOVA, O.I., BIRYUKOVA, R.S. **B**
COUNTRY OF INFO--USSR
SOURCE--POROSH. MET., AKAD. NAUK UKR. SSR; NO. 3, 89-93(MAR 1970)
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--CHEMICAL RESISTANCE, MOLYBDENUM COMPOUND, OXYGEN, AIR

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3002/0101 STEP NO--UR/0226/70/000/003/0089/0093
CIRC ACCESSION NO--AP0127727
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0127727

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHEMICAL RESISTANCE OF MOLYBDENUM DIGERMANIDE WAS STUDIED IN ACIDS OF VARIOUS CONCENTRATIONS AND THEIR MIXTURES, IN CAUSTIC SODA SOLUTIONS, OXIDATING MEDIA, MIXTURES AND ACIDS WITH OXIDIZERS, AND COMPLEXING AGENTS. IT IS SHOWN THAT THE MOGE SUB2 COMPOUND IS NOT RESISTANT TO THE EFFECT OF REAGENTS POSSESSING OXIDIZING PROPERTIES. THE RESISTANCE OF MOLYBDENUM DIGERMANIDE TO OXYGEN AND AIR WAS INVESTIGATED. MOLYBDENUM DIGERMANIDE PROVED TO BE LESS RESISTANT THAN MOLYBDENUM DISILICIDE. FACILITY: INST. OF PROBLEMS IN MATERIAL STUDIES, KIEV.

UNCLASSIFIED

USSR

UDC 615.272:576.851.555].015.4:612.017.1

KALINICHENKO, N. F., PODGORNAYA, L. G., and BIRYUKOVA, S. V., Kharkov Institute of Microbiology, Vaccines, and Sera imeni Mechnikov

"Hypersensitivity of the Delayed Type to Injection of *Cl. perfringens* Toxoid"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1972, pp 25-28

Abstract: Guinea pigs sensitized with a single subcutaneous injection of 50 BU of purified, concentrated *Cl. perfringens* toxoid series 10 received intracutaneously 0.1 ml of the same preparation 21 days later. Within 48 hours many of the animals developed hyperemia and necroses at the injection sites. These allergic reactions were intensified when Freud's adjuvant or aluminum hydroxide was combined with the toxoid. Sensitivity tended to decrease with increase in the toxoid titers of the animals' sera. Repeated injection of the toxoids, with or without adjuvant, raised the serum toxoid levels but had no effect on the intensity of skin reactions.

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USSR

UDC 615.372:576.851.555

KALINICHENKO, N. F., STAROBINETS, Z. G., PODGORNAYA, L. G., and BIRYUKOVA, S. V., Kharkov Institute of Microbiology, Vaccines and Sera imeni Mechnikov

"Sensitizing Properties of Purified Concentrated Clostridium perfringens Toxoids"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, 1971, pp 113-116

Abstract: Subcutaneous injection of mice and guinea pigs with sorbed (on aluminum hydroxide) or nonsorbed Cl. perfringens toxoids produced the typical severe symptoms of anaphylactic shock. The effect of the sorbed toxoid was more severe. The animals' reaction was the same whether the toxoids were prepared on casein or bouillon culture media. The sensitizing activity of the Cl. perfringens toxoid was caused by the protein of this antigen and not by an admixture of proteins from the nutrient media.

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Microbiology

USSR

UDC 576.851.55.097

CHERKAS, H. P., KALINICHENKO, M. F., BIRYUKOVA, S. V., and PIDHORNA, L. H.,
Kharkov Scientific Research Institute of Vaccines and Sera imeni I. I.
Mechnikov

"Toxins and Toxoids of Clostridium perfringens"

Kiev, Mikrobiologicheski Zhurnal, Vol 33, No 2, Mar/Apr 71, pp 173-175

Abstract: Several series of pancreatic, pepsin and acidic hydrolysates were prepared in an attempt to find a reproducible inexpensive culture medium for production of Clostridium perfringens toxin. It was determined experimentally that the best medium consisted of one part pancreatic hydrolysate, two parts acid hydrolysate diluted with distilled water to give 160-180% amine nitrogen and 1.5-2% peptone; pH of the medium -- 7.6-7.8. To simulate growth, 4% brewers yeast was added (amine nitrogen 400-500 mg-%). In such a medium after 5 hrs of incubation of Cl. perfringens at 37°C the pH dropped to 5.4-5.6 yielding material with toxin activity 400-600 MLD/ml. To obtain Cl. perfringens toxoid the culture liquid was filtered, formalin (0.3 and 0.2%) was added twice with an interval of 16-18 hrs. The deactivation of the culture medium lasted 7-14 days, the pH being kept at 7.2-7.4; it was then filtered, purified, and concentrated by the polyphosphate method in presence of sul-
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USSR

CHERKAS, H. P., et al., Mikrobiologicheskij Zhurnal, Vol 33, No 2, Mar/Apr 71, pp 173-175

furic acid and 0.35% of hexametaphosphate. The toxoid yield was 60-70% with specific activity of 200-350 EC/mg. The toxoids exhibited high immunogenic activity in experiments with white mice.

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USSR

UDC 616-058.13-022.7(CL.PERFRINGENS)

KALINICHENKO, N. F., BIRYUKOVA, S. V., PODGORNAYA, L. G., and STAROBINETS, Z. G., Kharkov Institute of Microbiology, Vaccines, and Sera imeni Mechnikov

"Delayed Hypersensitivity in Guinea Pigs Sensitized Against Cl. perfringens and Other Microorganisms"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, p 148

Abstract: Investigations were conducted on 300-350 g guinea pigs to determine whether Cl. perfringens would induce delayed hypersensitivity cross-reacting with allergens from other genera of bacteria. The animals were sensitized by subcutaneous injection of 1 ml of a formalin treated culture of one of the following: Cl. perfringens type A 28, E. coli Moscow, S. aureus 209, Ps. pyocyanea, and proteus No 132. Thirty days later the animals were tested with the respective allergens prepared by the method of Runova (1970). Each animal responded with a specific delayed hypersensitivity against the allergen derived from the bacterium with which it was immunized. Reaction against Cl. perfringens allergen in animals not sensitized with Cl. perfringens was not specific. Subsequently, animals sensitized against Cl. perfringens were tested with allergens derived from the

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USSR

KALINICHENKO, N. F., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, p 148

other bacteria. A typical cutaneous reaction indicating delayed hypersensitivity was obtained with each heterologous allergen, and was most pronounced with the E. coli allergen. After 60 days the reaction against the homologous Cl. perfringens allergen was found to wane, the reaction with the E. coli and staphylococcal allergens grew more intense, and that with the other allergens remained unchanged.

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